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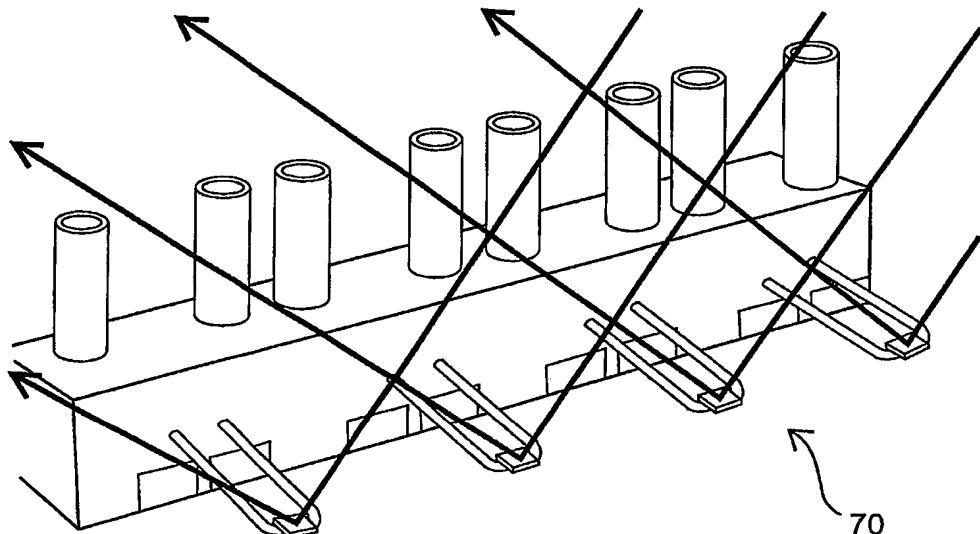
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(57) Abstract: The present invention provides a calorimeter device, generally comprising a reaction vessel which may be U-shaped and which may be cantilevered; and a sensor for detecting temperature changes. In various embodiments, the sensor detects heat input into or output from the reaction vessel; changes in the electrical properties of a material coated onto the reaction vessel; changes in the mechanical properties of the reaction vessel; or changes in the resonance properties of the reaction vessel. The present invention further provides arrays of a subject calorimeter device. The present invention further provides a system for detecting a temperature change. The present invention further provides methods of detecting a temperature change that occurs as a result of a chemical, biochemical, biological, light-induced, or physical process. The methods generally involve introducing a sample into a subject device, and detecting a temperature change.